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2 ABSTRACT

3 The present invention is an improved apparatus and method for mass spectrometry using
4 a dual ion trapping system. In a preferred embodiment of the present invention, three “linear”
5 multipoles are combined to create a dual linear ion trap system for trapping, analyzing,
6 fragmenting and transmitting parent and fragment ions to a mass analyzer – preferably a TOF
7 mass analyzer. The dual ion trap according to the present invention includes two linear ion
8 traps, one positioned before an analytic quadrupole and one after the analytic multipole. Both
9 linear ion traps are multipoles composed of any desired number of rods – i.e. the traps are
10 quadrupoles, pentapoles, hexapoles, octapoles, etc. Such arrangement enables one to maintain a
11 high “duty cycle” while avoiding “memory effects” and also reduces the power consumed in
12 operating the analyzing quadrupole.
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